



X-Plain™

Craniotomy for Brain Aneurysms

Reference Summary

Brain aneurysms are a very serious condition that can cause devastating strokes or can even be fatal.

Depending on the age of the patients, doctors usually recommend surgery for brain aneurysms.

If your doctor recommends surgery for you, the decision whether or not to have surgery is also yours.

This reference summary will help you better understand the benefits and risks of this surgery.

Anatomy

The brain is the control center of the body. It is inside of and protected by the skull. The brain is fed by many blood vessels.

An aneurysm is an abnormality of the blood vessel causing it to balloon. Nobody knows exactly why aneurysms occur.

This ballooning causes the walls of the vessel to become thin and therefore more likely to bleed.



Symptoms And Their Causes

A brain aneurysm may create pressure on and compress the brain causing weakness, blindness, and other neurological symptoms.

An aneurysm may also cause a brain bleed, or hemorrhage, around the brain or into it.

A high percentage of people who suffer from aneurysm rupture and bleeding do not survive. Many of the survivors go to nursing homes for the rest of their lives because of severe neurological problems.

An aneurysm may be discovered when a brain CAT scan or MRI is done for the above-mentioned symptoms or for other reasons.



Alternative Treatments

Other treatments may be used if the aneurysm cannot be reached by surgery. However, it is always preferable to treat aneurysms surgically if possible. This usually is more definite and is done under more controlled settings.

Surgical Treatment

An operation to “clip” the aneurysm may prevent further bleeding.

The clip isolates the aneurysm from the blood stream allowing it to deflate. This prevents further bleeds and also takes the pressure off the surrounding brain.

The operation itself is not meant to reverse the effect of any bleeding that may have occurred. It is instead meant to prevent any further bleeding.

The operation consists of opening up the skull and clipping the

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aneurysm. Some of the blood clot may also be taken out.

Usually the head is shaved before the skin incision is made.

Holes are made in the skull and a piece of bone is taken out.

The brain covering is then entered and the aneurysm is clipped.



At the end of the operation, the piece of skull is placed back and the skin is closed.

Your doctor will tell you how long you are likely to stay in the hospital. This depends on several factors, such as your age and medical condition.

Risks And Complications

This operation is relatively safe. There are, however, several possible risks and complications.

You need to know about them just in case they happen. By being informed you may be able to help your doctor detect complications early.

The risks and complications include those related to anesthesia

and those related to any type of surgery.

Risks related to anesthesia include, but are not limited to, heart attacks, strokes pneumonia, and blood clots in the legs. If the blood clots get dislodged, it may cause respiratory failure.

Any of these complications could lead to death.

These risks are more likely in patients with a previous history of heart, lung or kidney problems.

These risks will be discussed with you in greater detail by your anesthesiologist.

Some of the risks are seen in any type of surgery. These include:

- Infection, deep in the brain or at the skin level.
- Bleeding either during or after the operation, possibly necessitating another operation and potentially leading to death. A blood transfusion may be necessary.
- Skin scar that may be painful or ugly.

Other risks and complications are related specifically to this aneurysm surgery.

These again are unlikely. However, it is important to know about them.

How likely these risks are, depends on where and how big the aneurysm is.

The bigger the aneurysm and the deeper it is in the brain, the greater the risk of complications.

These include, but are not limited to, stroke, paralysis, weakness, inability to understand or speak, blindness, personality changes, seizures and death.

Infections may also rarely occur. They can be limited to the skin only or can be deep, involving the bone flap and requiring its removal and replacement with plastic material months later.

The infection can also involve the brain itself, requiring long-term antibiotics and possibly another operation. These are the risks and complications of the operation itself.

As stated earlier the operation's aim is to prevent further bleeding. It is not intended to reverse damage already caused by bleeding or compression of the brain.

There are two other possible problems after bleeding from aneurysms: vasospasm and hydrocephalus. But these are highly unlikely when an aneurysm has not ruptured.

Vasospasm is a condition where the blood vessels in the brain narrow because of the initial bleed.

This can cause strokes that can be as devastating, if not more devastating than the bleed itself.



Vasospasm may be treated with medication to relax the blood vessels. Other medications are available to increase the blood pressure and force blood into the blood vessels.

This treatment for vasospasm is relatively safe if the aneurysm has already been clipped.

In spite of all available medication, vasospasm may not improve.

The bleed can also cause the fluid that is normally seen in the brain to accumulate.

This condition is called hydrocephalus. If left untreated, it can cause coma and death.

The symptoms of hydrocephalus include the following:

- Severe headache.
- Sleepiness.
- Weakness.

Hydrocephalus is treatable by draining the fluid.

After The Surgery

After the surgery you will probably spend a day or two in the intensive care unit (ICU). How long you stay depends on how well you are doing.

The nurses in intensive care will carefully watch you. This involves repeated checking of your neurological status as well as close watch over your heart and blood pressure.

Later you may receive physical therapy, occupational therapy, and other therapies to aid your recovery.

Whether or not you will be able to resume your usual activities depends on how well you are doing at the time of your follow-up.

Your doctor will tell you how long it will take before you are healed and when you can go back to work. This depends on your age, type of work, and medical condition, as well as other factors.

Summary

Brain aneurysms are a very serious condition that may lead to a stroke or to death.

The outcome is worse after a bleed. Therefore, it is recommended in many cases to go ahead and operate on them prior to a bleed.

In spite of the advanced technological treatment, the outcome of aneurysms that have bled

remains very uncertain and potentially very bleak.

However, surgery for brain aneurysms that have not yet bled can relieve a variety of serious symptoms. It can even be life saving.

Brain surgery has become safer than before, thanks to advances in technology and anesthesia.

However, as you have learned, complications may still happen. Knowing about them will help you detect them early if they happen.